REMARKS

The following remarks are made in response to the Office Action mailed on August 23, 2006.

Claims 23-51 are pending in the application. New claims 50-51 have been added. Deposit Account 20-0823 may be charged a fee of $200 (fee code 2201) for the 2 additional independent claims. It is believed that no other fees are due in connection with this paper. However, in the event that any additional fees are necessary to prevent abandonment of this application, any such fees are hereby authorized to be charged to our Deposit Account 20-0823. Prompt and favorable consideration of this Amendment and Response is respectfully requested.

In the Office Action, claims 23-49 were rejected under 35 U.S.C. § 101 on the grounds that the claimed invention is directed to non-statutory subject matter. Specifically, the Office Action states that the language of the claims is directed merely to an abstract idea (transforming a mathematical algorithm such as a probability distribution) that has no limitation to a practical application which produces a concrete, useful and tangible result. Reconsideration of the rejection is respectfully requested.

In determining whether subject matter meets the requirements of §101, the proper inquiry "focuses on whether the mathematical algorithm is applied in a practical manner to produce a useful result." *AT&T Corp. v. Excel Comm'cns, Inc.*, 172 F.3d 1352, 1360, 50 U.S.P.Q.2d 1447, 1454 (Fed. Cir. 1999) (distinguishing the claims from those found in *In re Grams,* 888 F.2d 835, 839, 12 U.S.P.Q.2d 1824, 1829 (Fed. Cir. 1989) that did not recite useful, concrete, and tangible). In *AT&T,* the Federal Circuit found patentable a claimed process that applied a Boolean principle to produce a useful, concrete, tangible result without pre-empting other uses of

the mathematical principle. *AT&T*, 172 F.3d at 1358, 50 U.S.P.Q.2d at 1452. The representative claims at issue in *AT&T* were as follows:

> 1. A method for use in a telecommunications system in which interexchange calls initiated by each subscriber are automatically routed over the facilities of a particular one of a plurality of interexchange carriers associated with that subscriber, said method comprising the steps of:
>
> generating a message record for an interexchange call between an originating subscriber and a terminating subscriber, and
>
> including, in said message record, a primary interexchange carrier (PIC) indicator having a value which is a function of whether or not the interexchange carrier associated with said terminating subscriber is a predetermined one of said interexchange carriers.
>
> 40. A method for use in a telecommunications system in which interexchange calls initiated by each subscriber are automatically routed over the facilities of a particular one of a plurality of interexchange carriers associated with that subscriber, said method comprising the steps of:
>
> generating a message record for an interexchange call between an originating subscriber and a terminating subscriber,
>
> accessing a database in which are stored the telephone numbers of substantially all of the subscribers associated with the specific one of said interexchange carriers over which said call was routed to make a determination as to whether or not the interexchange carrier associated with said terminating subscriber is said specific interexchange carrier over whose facilities said call was routed,
>
> establishing an indicator for said call at a particular value when said determination is that the interexchange carrier associated with said terminating subscriber is said specific interexchange carrier over whose facilities said call was routed, and
>
> providing an output which is a function of both information in said message record and of said indicator.

The Federal Circuit stated these claims were patentable because the process used several categories of input data, applied Boolean algebra to that data to determine the value of a PIC indicator, and applied that value through switching and recording mechanisms to create a signal

useful for billing purposes, i.e. a useful, concrete, and tangible result. *AT&T*, 172 F.3d at 1358, 50 U.S.P.Q.2d at 1452.

The Federal Circuit reached a similar conclusion in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 47 U.S.P.Q.2d 1596 (Fed. Cir. 1998), when it evaluated the following claim:

> 1. A data processing system for managing a financial services configuration of a portfolio established as a partnership, each partner being one of a plurality of funds, comprising:
>
> (a) computer processor means for processing data;
>
> (b) storage means for storing data on a storage medium;
>
> (c) first means for initializing the storage medium;
>
> (d) second means for processing data regarding assets in the portfolio and each of the funds from a previous day and data regarding increases or decreases in each of the funds' assets and for allocating the percentage share that each fund holds in the portfolio;
>
> (e) third means for processing data regarding daily incremental income, expenses, and net realized gain or loss for the portfolio and for allocating such data among each fund;
>
> (f) fourth means for processing data regarding daily net unrealized gain or loss for the portfolio and for allocating such data among each fund; and
>
> (g) fifth means for processing data regarding aggregate year-end income, expenses, and capital gain or loss for the portfolio and each of the funds.

The Federal Circuit found "the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces a useful, concrete and tangible result -- a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades." *State Street Bank*, 149 F.3d at 1373, 47 U.S.P.Q.2d at 1600 (internal citations omitted).

Even prior to these decisions, the Federal Circuit has repeatedly found claims directed to subject matter that employs a mathematical computation patentable under §101 as long as they produce a useful, concrete and tangible result. For instance, in *Arrhythmia Research Technology Inc. v. Corazonix Corp.,* 958 F.2d 1053, 22 U.S.P.Q.2d 1033 (Fed. Cir. 1992), the Federal Circuit held that the transformation of electrocardiograph signals from a patient's heartbeat by a machine through a series of mathematical calculations constituted a practical application of an abstract idea (a mathematical algorithm, formula, or calculation), because it corresponded to a useful, concrete or tangible thing -- the condition of a patient's heart. The claim at issue in *Arrhythmia Research* was as follows:

> 1. A method for analyzing electrocardiograph signals to determine the presence or absence of a predetermined level of high frequency energy in the late QRS signal, comprising the steps of:
>
> converting a series of QRS signals to time segments, each segment having a digital value equivalent to the analog value of said signals at said time;
>
> applying a portion of said time segments in reverse time order to high pass filter means;
>
> determining an arithmetic value of the amplitude of the output of said filter; and
>
> comparing said value with said predetermined level.

Arrhythmia, 958 F.2d at 1055, 22 U.S.P.Q.2d at 1035.

Another example is seen in *In re Alappat,* 33 F.3d 1526, 31 U.S.P.Q.2d 1545 (Fed. Cir. 1994), where the Federal Circuit held that a process, machine, manufacture, or composition of matter employing a law of nature, natural phenomenon, or abstract idea is patentable subject matter even though a law of nature, natural phenomenon, or abstract idea would not, by itself, be entitled to such protection. *Alappat,* 33 F.3d at 1543, 31 U.S.P.Q.2d at 1557. "The mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers, and storing numbers, in and of itself, would not render it nonstatutory subject matter, unless, of

course, its operation **does not** produce a useful, concrete and tangible result." *Alappat,* 33 F.3d at 1544, 31 U.S.P.Q.2d at 1557 (emphasis added). The *Alappat* invention related to a rasterizer for converting discrete waveform data samples into anti-aliased pixel illumination intensity data to be displayed on a display means. *Id.* Applying the principles above, the Federal Circuit found the following claim patentable under §101:

> 15. A rasterizer for converting vector list data representing sample magnitudes of an input waveform into anti-aliased pixel illumination intensity data to be displayed on a display means comprising:
>
> (a) means for determining the vertical distance between the endpoints of each of the vectors in the data list;
>
> (b) means for determining the elevation of a row of pixels that is spanned by the vector;
>
> (c) means for normalizing the vertical distance and elevation; and
>
> (d) means for outputting illumination intensity data as a predetermined function of the normalized vertical distance and elevation.

Alappat, 33 F.3d at 1539, 31 U.S.P.Q.2d at 1552.

The Patent Office has allowed similar claims for presumably the same reasons, including the following:

> 1. A method executed by a data processor system for quantifying clarity in a natural language processing system by measuring abstractness deviation for sets of inheritance sibling nodes within a semantic inheritance network, comprising the steps of:
>
> a) identifying a set of inheritance sibling nodes;
>
> b) computing an average abstractness for the set of inheritance sibling nodes;
>
> c) computing an abstractness deviation from the average abstractness, for each inheritance sibling node in the set of inheritance sibling nodes;
>
> d) summing the abstractness deviations of each inheritance sibling node in the set of inheritance sibling nodes;
>
> e) comparing the summed abstractness deviation of a set of sibling nodes to a summed abstractness deviation of an alternative topology for the set of inheritance nodes; and

f) optimizing the semantic network inheritance link topology by selecting the alternative topology with less abstractness deviation.

U.S. Pat. No. 6,778,970 (Examiner G. Davis). See also,

20. A method for implementing automation in a computer system, the method comprising:
enabling a subject matter expert to input rules;
inputting rules; forming a knowledge database based on the rules;
generating source code for a fluid object and creating a morphable object based on the rules; and
enabling a user to input known information into the morphable object through a user interface, wherein appearance of said user interface varies in response to information input by said user.

U.S. Pat. No. 6,957,206 (Examiner G. Davis). See also,

15. A learning method for generating a predictive coefficient to be used in a digital signal processing device for converting a digital audio signal, in prediction of said conversion processing, comprising:
generating a learner digital audio signal by deteriorating a desired digital audio signal;
calculating power spectrum data from said learner digital audio signal;
extracting a part of power spectrum data from said power spectrum data;
classifying said digital audio signal based on said part of power spectrum data; and
calculating a predictive coefficient corresponding to said classifying step based on said desired digital audio signal and said learner digital audio signal.

U.S. Pat. No. 6,907,413 (Examiner G. Davis).

Under the claimed process and system of the present invention, several categories of input data (i.e., a biometric signal and biometric information of a known classification) are received, and that data is then processed (i.e., generating probability distributions, computing a transform, and transforming the distributions onto a scale) in a way to produce a tangible,

concrete, and useful result (i.e., determining whether the identity of an individual is authentic or spurious).

The Examiner relies on the holding of *In re Grams,* 888 F.2d 835 (Cir. Fed. 1989) to support his position that the claims of the present application are not directed to a patentable subject matter. In *Grams,* the court found that the method was nonstatutory subject matter because all but one of the steps of the claim were in essence a mathematical algorithm and the remaining step merely provided data for the algorithm. *In re Grams,* 888 F.2d 835 (Cir. Fed. 1989). The Examiner's reliance on *Grams* is misplaced as evidenced by the Federal Circuit's opinion in *AT&T*, which as stated previously found claims patentable under §101 because they recited a tangible, concrete, and useful result .

Here, each of the independent claims (i.e., claims 23, 34, 48, 50 and 51) recite something more than that found in *Grams.* Like the claims at issue in *AT&T* and *State Street Bank*, the claims here recite steps involving the transformation of data representing biometric information of a known classification via a machine through a series of mathematical calculations, and comparing a biometric signal of an individual against the transformed data to produce a concrete, tangible an useful result, namely establishing whether the biometric signal of such individual is authentic or spurious. Establishing the authenticity of an individual's biometric signal constitutes a practical application of a mathematical algorithm, especially where, in today's environment, identity theft is running rampant. For instance, the Federal Trade Commission states:

> Identity theft is a serious crime. People whose identities have been stolen can spend months or years and thousands of dollars cleaning up the mess the thieves have made of a good name and credit record. In the meantime, victims of identity theft may lose job opportunities, be refused loans for education, housing, or cars, and even get arrested for crimes they didn't commit. Humiliation,

> anger, and frustration are among the feelings victims experience as they navigate the process of rescuing their identity.

See http://www.ftc.gov/bcp/conline/pubs/credit/idtheft.htm#Introduction. In fact, a May 2003 survey commissioned by the Federal Trade Commission (FTC) estimated the number of consumer victims of identity theft over the year prior to the survey at 4.6% of the population of U.S. consumers over the age of 18, or 9.91 million individuals with losses totaling $52.6 billion. *http://www.fbi.gov/congress/congress05/swecker041305.htm.* The ability to positively identify an individual is also critical in today's environment given the events of 911 and the increased risk of terrorism. There can be no doubt that the claimed methods and system provide a practical application to a mathematical algorithm.

Each of the independent claims positively recite the result of authenticating the identity of an individual based upon a biometric signal received from the individual. Thus, claims 23, 34, 48, 50 and 51 are distinguishable from the subject matter of *Grams* that recited no useful result, and more similar to the type of subject matter that the Federal Circuit found patentable in *AT&T Corp.*, which recited a useful, concrete and tangible result. This is the exact reasoning used by the Federal Circuit to distinguish the claims in *In re Grams* from those in *AT&T Corp.* Accordingly, Applicant respectfully requests that the Office reconsider the rejection and find that the subject matter recited in independent claims 23, 34, 48, 50 and 51, and the claims that depend therefrom, meets the requirements of 35 U.S.C. §101.

It is believed that a full and complete response has been made to the outstanding office action, and as such, the present application is in condition for allowance. If the Examiner has any outstanding issues regarding the present application, he is urged to contact the undersigned at the number listed below.

Applicant respectfully requests that all future correspondence be addressed to applicant's representative below.

Respectfully submitted,

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Date: 12/11/06

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